

Contributions to Orchidaceae in Western Australia: recognition of five new species

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Abstract

Brockman, G. & French, C.J. Contributions to Orchidaceae in Western Australia: recognition of five new species. *Nuytsia* 37: 33–44 (2026). *Cyanicula micrantha* G.Brockman & C.J.French, *Paracaleana petraea* G.Brockman, *Paracaleana semota* G.Brockman, *Pterostylis inflata* G.Brockman & C.J.French and *Thelymitra congesta* G.Brockman & C.J.French are formally named and described with photographs provided to aid identification. All have been assessed as warranting conservation-listing, with the exception of *P. inflata*.

Introduction

Extensive field research, herbarium specimen examination and high-definition photography over many years has identified many undescribed native orchid taxa in the south-west of Western Australia. Many of these taxa are poorly known with apparently limited distribution and may warrant targeted conservation efforts. There is danger that some of these taxa may lack the protection provided by not being formally named and their conservation status assessed. Others are better known but require more field work to identify and collect sufficient material to allow formal recognition, including, in some cases, collection of type material. The success of this field work is often seasonally dependant and may be delayed by extended periods of poor rainfall, which in turn may delay the formal publishing of new taxa.

In order to expedite the naming of known but undescribed taxa belonging to a range of Orchidaceae genera, we have decided to publish a series of papers. These will not be restricted to a single genus but will present those taxa for which descriptions are considered complete and ready for publication. In this, the first of these papers, five new taxa are formally described.

Methods

Study of dried specimens lodged at the Western Australian Herbarium (PERTH) were supplemented by examination of flowering plants in the field and high-resolution images to ensure characters distinguishing the novel taxa are consistent over their respective distributional ranges. Botanical reference cards were created by dissecting floral parts in the field and attaching them to cardstock using 3M acid free tape, enabling careful morphological comparisons between the proposed new taxa and related, currently named taxa. Field studies also provided information on biology, ecology and phenology. We believe the taxa described here as new exhibit consistent, measurable morphological differences to formally described taxa and warrant species status.

Previous taxonomy on the Blue Sun Orchids including the Western Australian species has been published by Jeans (2004; 2013). For consistency we have followed the terminology developed and explained by Jeans where possible, especially in the description of the column parts.

Taxonomy

Cyanicula micrantha G.Brockman & C.J.French, *sp. nov.*

Type: Green Range, Western Australia [precise locality withheld for conservation purposes], 23 September 2024, G. Brockman GBB 4665 (*holo:* PERTH 09793542; *iso:* CANB, MEL).

Terrestrial tuberous *herb* to 70 mm high. *Plants* solitary. *Leaf* basal, obliquely erect, sessile, 15–20 mm long, 5–6 mm wide, lanceolate, entire, pubescent to pilose, light green on both surfaces. *Scape* erect, 30–55 mm high, 1–1.5 mm diam., pilose, soft green; bracts 1 or 2 at base of pedicel, 6–7 mm long, 2–2.5 mm wide, pilose, light green; pedicels 5–7 mm long, 1–1.5 mm in diam. *Flowers* singular, 20–30 mm across; sepals and petals pale blue, narrowly elliptical with a rounded apex, entire, upper surface sparsely pilose with hairs more frequent toward the base, undersurface with denser fine dark-topped club-like trichomes throughout. *Dorsal sepal* obliquely reclined, gently arching, 11–13 mm long, 4–5 mm wide, apex rounded. *Lateral sepals* spreading obliquely downward, gently arching, 10–12 mm long, 4–5 mm wide, apex rounded. *Petals* spreading obliquely upward, gently arching, 11–12 mm long, 3.5–5 mm wide, apex rounded. *Labellum* on a claw *c.* 2 mm long, *c.* 1.5 mm wide; lamina round, 4–5.5 mm long, 3.5–4.5 mm wide when flattened, with an acuminate tip *c.* 1 mm long, erect near base when viewed from the side with the distal half angled obliquely forward then down, concave across midway with edges erect when viewed from the front; lamina round when flattened, white with a few small randomly distributed purple-blue spots; calli cream to yellow, shortly tubular with a club-like glossy top in fresh specimens, clustered at base and covering the entire lamina (not in rows) including the apical point. *Column* gently arching forward, 6–6.5 mm long, 2–3 mm wide, with fine wings *c.* 1 mm wide throughout length. *Anther* orbicular, *c.* 1 mm in diam., creamy yellow. *Pollinia* *c.* 1 mm long, mealy, creamy yellow. *Stigma* facing obliquely forward, *c.* 1 mm diam., orbicular, translucent. *Ovary* 5–6 mm long, 2–2.5 mm diam. *Capsule* not seen. (Figure 1)

Diagnostic features. *Cyanicula micrantha* can be distinguished from all other members of the genus by a combination of the following features: short stature, to 70 mm high; leaf 15–20 mm long, 5–6 mm wide, lanceolate, soft green on both surfaces; flowers 20–30 mm across, with pale blue, narrowly elliptical sepals and petals; labellum lamina round, 4–5.5 mm long when flattened, white with a few randomly distributed purple-blue spots, with dense creamy yellow to white club-like calli covering the lamina in a disorderly fashion (i.e. not in rows) including the acuminate tip.

Other specimens examined. Only known from the type.

Phenology. Flowering throughout September.

Distribution and habitat. Currently only known from a single population in the Green Range area, north-east of Albany. It grows in open areas in sandy soils in Marri woodland and appears to not require a fire prior to flowering.

Conservation status. To be listed as Priority One under Conservation Codes for Western Australian Flora (Tanya Llorens pers. comm.). Known from a single population of less than 100 flowering plants. Despite searches of similar habitat, both burnt and unburnt, no further populations have been found.

Etymology. From the Greek *micro-* (small-) and *-anthus* (-flowered), alluding to the flower size.

Common name. Green Range China Orchid.

Affinities. *Cyanicula micrantha* has small, blue flowers like *C. amplexans* (A.S.George) Hopper & A.P.Br. and *C. aperta* Hopper & A.P.Br. but can be distinguished by its round labellum (*cf.* tri-lobed in *C. amplexans* and *C. aperta*).



Figure 1. *Cyanicula micrantha*. A – plant *in situ*; B – labellum. Voucher: G. Brockman GBB 4665. Photographs: G. Brockman.

Cyanicula micrantha is distinguished from *C. ixioides* (Lindl.) Hopper & A.P.Br. by its blue flowers (*cf.* white or yellow in *C. ixioides*).

Cyanicula micrantha is distinguished from *C. fragrans* Hopper & A.P.Br. in having a shorter scape (to 7 cm high *cf.* 7–12 cm in *C. fragrans*) and equilateral petals and sepals (*cf.* inequilateral), and lacks the rich vanilla odour of *C. fragrans*.

Cyanicula micrantha is distinguished from *C. gemmata* (Lindl.) Hopper & A.P.Br., *C. ashbyae* Hopper & A.P.Br. and *C. gertrudae* (Ostenf.) Hopper & A.P.Br. in having smaller lateral sepals (11–13 mm long *cf.* 20–30 mm in *C. gemmata*, 17–25 mm in *C. ashbyae*, and 18–25 in *C. gertrudae*).

Cyanicula micrantha is distinguished from *C. nikulinskyae* Hopper & A.P.Br. in having a white labellum with small irregular blue spots and labellum calli covering the entire surface including the apical point (*cf.* a pale blue labellum with a white basal stripe and labellum calli decreasing toward the apex in *C. nikulinskyae*).

Paracaleana petraea* G.Brockman, *sp. nov.

Type: north-east of Jarrahdale, Western Australia [precise locality withheld for conservation reasons], 21 October 2007, G. Brockman 2190 (*holo:* PERTH 07847548).

Terrestrial tuberous *herb* to 70 mm high. *Plants* solitary, often in loose colonies. *Leaf* basal, erect, withered at anthesis; lamina 15–23 mm long, 3–5 mm wide, glabrous, thin, narrowly cordate, flattened to slightly concave in transverse section, dark maroon on both surfaces, apex acute. *Scape* 40–60 mm high, *c.* 0.5 mm diam., wiry, dull brownish maroon; floral bract 2–3 mm long, 1.5–2 mm wide, tightly sheathing pedicel base, cordate; pedicels 4–8 mm long, *c.* 0.3 mm diam. *Flowers* solitary or occasionally paired, inverted, glabrous; sepals and petals linear with an expanded apex, margins revolute, sepals brown to

maroon, petals green. *Dorsal sepal* appressed against column and falcate in distal quarter, 9–10 mm long, *c.* 0.5 mm wide, green becoming brown distally. *Lateral sepals* spreading downwards and held appressed to column wings, falcate in distal third, 9–11 mm long, *c.* 0.5 mm wide; margins entire, involute, apex acute. *Petals* appressed tightly to column wings, shallowly curved, hair-like, narrower than sepals, 7–9 mm long, *c.* 0.25 mm wide. *Labellum* highly irritable, held above horizontal in set position, stiffly sprung on a long broadly rhomboidal claw 5–6 mm long, 2.5–3 mm wide, attached to front of column foot with the claw up-curved in the set position and recurved when sprung, with a triangular apex extending backwards off lamina base; lamina 10–12 mm long, 4–5 mm wide, narrowly lageniform, entire, with a shallow hump at two-thirds of length when viewed from the side, with a narrowly obtuse apex; lamina calli sessile, irregularly hemispheric to longitudinally extended, smooth, black, glossy, confined to the distal third to half. *Column* downcurved, 6–8 mm long, broadly winged; wings 4–4.5 mm wide, elliptical, incurved, opaque greenish yellow with brown to maroon suffusions. *Anther* *c.* 2 mm long, *c.* 1.5 mm wide, yellowish green, obtuse, terminating in a point. *Pollinia* lamellate, granular, yellow. *Stigma* *c.* 2 mm long, *c.* 1.5 mm wide, ovate, dull yellow. *Ovary* narrowly pyramidal, greenish yellow with brown to maroon longitudinal stripes. *Capsule* not seen. (Figure 2)

Diagnostic features. *Paracaleana petraea* may be distinguished from all other members of the genus by the following combination of characters: leaf narrowly cordate, dark maroon on both surfaces, 15–23 mm long, 3–5 mm wide, apex acute; dark brown to maroon flower colouration; labellum lamina entire, narrowly lageniform, mildly humped at half to two-thirds of length when viewed from the side, 10–12 mm long, 4–5 mm wide, with black glossy calli restricted to the distal third to half.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 5 Nov. 2006, G. Brockman GBB 1988 (PERTH); 6 Nov. 2008, F. Hort & J. Hort 3358 (PERTH); 2 Nov. 2011, F. & J. Hort FH 3702 (PERTH 09142223).

Phenology. Flowering from mid-October to mid-November.

Distribution and habitat. Found over a small geographic range on the Darling Scarp, from Gleneagle south to Karnet, south-east of Perth. Grows exclusively in moss and lichen fields on granite outcrops.

Conservation status. To be listed as Priority One under Conservation Codes for Western Australian Flora (Tanya Llorens pers. comm.). Locally restricted to granite outcrops with numbers appearing to be decreasing with expanding dry summers in known locations. Where these outcrops are accessible to off-road vehicles, they are frequently damaged by four-wheel drive and trail bike activity that churns up the moss fields.

Etymology. From the Latin *petraea* (growing among rocks), alluding to the exclusive habitat of this species.

Common name. Jarrahdale Duck Orchid.

Affinities. *Paracaleana petraea* is most similar to *P. granitica* Hopper & A.P.Br. with which it has been previously included. It is distinguished from this species by its uniformly purple leaf (*cf.* green suffusions adaxially in *P. granitica*), smaller flowers with column wings 6–8 mm long and 4–4.5 mm wide (*cf.* 9–11 mm long and 6–7 mm wide), column of green and brown suffusions (*cf.* pale yellowish green with maroon blotches and markings), and darker, brown to maroon labellum that has a hump at half to two thirds the length and is held above horizontal in the set position (*cf.* yellowish green and flat, and held obliquely below horizontal).

Paracaleana petraea has been observed growing with *P. gracilicordata* Hopper & A.P.Br. at several locations. It can be distinguished from this species by its lanceolate leaves *cf.* narrowly cordate in *P. gracilicordata*, larger green and brown flowers, *cf.* reddish pink, and larger labellum lamina 10–12 mm long, 4–5 mm wide *cf.* 7–9 mm long, 3–4 mm wide. Where the species grow together, *P. petraea* is



Figure 2. *Paracaleana petraea*. A – plant *in situ*, noting withered leaf and moss bed habitat. B – flower. Voucher: G. Brockman 2190. Photographs: G. Brockman.

coming into bloom when *P. gracilicordata* is almost finished flowering or more often in seed.

Occasionally *P. petraea* grows with *P. nigrita* (Lindl.) Blaxell, a species that flowers earlier (September *cf.* starting in mid-October in *P. petraea*) and has a labellum with calli covering more than half of the lamina (*cf.* calli on one-third to half of the lamina in *P. petraea*).

Paracaleana semota G.Brockman, *sp. nov.*

Type: East Yuna, Western Australia [precise locality withheld for conservation reasons], 3 September 2024, G. Brockman GBB 4637 (*holo:* PERTH 09793488; *iso:* CANB, MEL).

Illustration. A.P. Brown, *The Complete Orchids of Western Australia* 2: 66 (2022), as *Paracaleana* sp. Northampton.

Terrestrial tuberous *herb* to 120 mm high. *Plants* solitary, often in loose colonies. *Leaf* basal, erect to spreading; lamina 15–24 mm long, 5–7 mm wide, glabrous, thin, narrowly cordate, flattened to slightly concave in transverse section, dark maroon on both surfaces, apex acute. *Scape* 75–100 mm high, *c.* 1 mm in diam., wiry, dull brownish maroon and greenish yellow; floral bract, 3–4 mm long, 1–2 mm wide, tightly sheathing pedicel base, acuminate; pedicels 10–15 mm long, 0.5 mm in diam. *Flowers* solitary or paired, inverted, glabrous, column wings and labellum greenish yellow and pale maroon with darker maroon blotches and markings; sepals and petals linear with a narrowly clavate to acute apex, margins revolute. *Dorsal sepal* spreading downwards, appressed against column and falcate in distal third, 8–10 mm long, *c.* 1 mm wide, apex narrowly clavate. *Lateral sepals* spreading downward, usually held away from column wings, distinctly falcate in distal third, 7–9 mm long, *c.* 1 mm wide. *Petals* spreading downwards, appressed to column wings, shallowly curved, narrower than sepals, 6–9 mm long,

c. 0.5 mm wide. *Labellum* highly irritable, held horizontal or below in set position, stiffly sprung on a long broadly rhomboidal claw 3–5 mm long, 1.5–2 mm wide, attached to front of column foot with the claw upcurved in the set position and recurved when sprung, with a narrow obtuse apex extending backwards off lamina base; lamina 8–9 mm long, 3.5–4 mm wide, narrowly lageniform, entire, flattened throughout length when viewed from side, with a triangular and narrowly obtuse apex; lamina calli sessile, irregularly hemispheric, smooth, black, glossy, confined to distal quarter and extending further along the lateral margin. *Column* downcurved, 7–9 mm long, broadly winged; wings 3–4 mm wide, rectangular, incurved, opaque greenish to greenish maroon with darker maroon blotches and markings. *Anther* 1.5–2 mm long, 1.5–2 mm wide, yellowish green, obtuse, terminating in a point. *Pollinia* 1.5–2 mm long, four, lamellate, granular, yellow. *Stigma* 1.5–2 mm long, 1.5–2 mm wide, ovate, dull yellow. *Ovary* narrowly pyramidal, greenish yellow with brownish maroon longitudinal stripes. *Capsule* not seen. (Figure 3)

Diagnostic features. *Paracaleana semota* may be distinguished from all other members of the genus by the following combination of characters: leaf narrowly cordate, dark maroon on both surfaces, 15–24 mm long, 5–7 mm wide, apex acute; labellum lamina entire, narrowly lageniform, flat throughout length, 8–9 mm long, 3.5–4 mm wide, with black glossy calli restricted to the distal quarter and extending further along the lateral margins.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 25 Aug. 2003, *G. Brockman* GBB 888 (PERTH); 30 Aug. 2004, *G. Brockman* GBB 1305 (PERTH); 4 Oct. 2008, *G. Brockman* GBB 2370 (PERTH); 3 Sep. 2024, *G. Brockman* GBB 4631 (CANB, NSW, PERTH); 3 Sep. 2024, *G. Brockman* GBB 4638 (PERTH); 9 Sep. 2005, *S.D. Hopper* 8658 (PERTH); 11 Sep. 2005, *S.D. Hopper* 8663 A (PERTH).

Phenology. Flowering mid-August to mid-September. Fruiting from October to November.

Distribution and habitat. Known from two, widely separated locations, to the west and north-east of Northampton. Grows in white to yellowish sand in very open *Acacia* and *Melaleuca* shrubland with sedges and scattered annuals.



Figure 3. *Paracaleana semota* flower. Voucher: *G. Brockman* GBB 4637. Photograph: *G. Brockman*.

Conservation status. To be listed as Priority Two under Conservation Codes for Western Australian Flora (Tanya Llorens pers. comm.). Restricted but locally common in suitable habitat.

Etymology. From the Latin *semotus* (isolated or remote), alluding to the distribution of this species.

Common name. Northampton Duck Orchid.

Affinities. *Paracaleana semota* is most similar to *P. disjuncta* D.L.Jones. It is distinguished by having fewer calli on the labellum lamina (covering the distal quarter *cf.* covering the distal third in *P. disjuncta*), mostly smaller flower with petals and sepals 7–9 mm long (*cf.* 8–12 mm long) and often has wider leaves (5–7 mm wide *cf.* 3–6 mm). Known populations of *P. semota* and *P. disjuncta* are geographically separated by over 500 km and have distinct flowering periods (mid-August to mid-September *cf.* late October through November, respectively).

Paracaleana semota has affinities to *P. gracilicordata* Hopper & A.P.Br. but differs in having calli covering only the distal quarter of the labellum lamina (*cf.* one third to two fifths in *P. gracilicordata*), and a broader leaf (5–7 mm wide *cf.* 3–4 mm). *Paracaleana semota* grows in sandy habitats (*cf.* granite complex) and the two species are separated geographically by 300 km.

Paracaleana semota is geographically located closest to *P. terminalis* Hopper & A.P.Br., with some collections previously identified as this species. It differs in having a mostly narrower labellum lamina, (3.5–4 mm wide *cf.* 4–4.5 mm in *P. terminalis*) with calli covering the distal quarter and extending beyond along the lateral margins (*cf.* covering one fifth of the labellum lamina or less).

Pterostylis inflata G.Brockman & C.J.French, *sp. nov.*

Type: Warner Glen Road, 1.4 km E of Rosa Glen Road, Western Australia, 17 September 2023, G. Brockman GBB 4578 (*holo:* PERTH 09793534, *iso:* CANB, MEL).

Pterostylis sp. Bloated bird orchid (A.R. Annels et al. ARA 5478), Western Australian Herbarium, in *Florabase*, <https://florabase.dbca.wa.gov.au/> [accessed 14 May 2025].

Illustrations. A.P. Brown, K.W. Dixon, C.J. French & G. Brockman, *Field guide to the Orchids of Western Australia*: 395 (2013), as *Pterostylis* sp. ‘bloated’; N. Hoffman, A.P. Brown & J. Brown, *Orchids of South-West Australia*, 4th edn: 439 (2021), as *Pterostylis* sp. ‘bloated’; A.P. Brown, *Orchids of Western Australia*, 2: 130 (2022), as *Pterostylis* sp. ‘bloated’.

Terrestrial tuberous *herb* 170–310 mm high. *Leaves* in sterile plants basal, 11–16, spreading to form a circular rosette; petiole 6–10 mm long; lamina 8–12 mm long, 6–8 mm wide, broadly lanceolate, green, often spotted with white, with entire margins, apex acuminate. *Leaves* in fertile plants obliquely erect and densely arranged (in a loose rosette) on lower 50–70 mm of scape, 2–17 with 3 or 4 sterile appressed bracts positioned further up the scape; lamina 12–25 mm long, 4–9 mm wide, broadly lanceolate, undulate, with a strong mid-vein, dark green with white interveinal areas, with entire margins, apex long acuminate. *Scape* 140–270 mm high, 2.5–3 mm diam., smooth, green. *Flower* solitary, suberect, 40–65 mm long, 40–55 mm across, galea transparent to translucent green with darker green veins; petals and sepals brown, sepaline pad brown. *Galea* when viewed from the front with basal lobe ovate, 15–18 mm wide, narrowed suddenly in distal third to form a broadly lanceolate upper lobe; when viewed from the side with basal lobe gibbous, gently concave near the middle and curved forwards in distal quarter, ending in an erect, gently recurved or sigmoid-shaped apical point. *Dorsal sepal* 42–50 mm long including apical point, translucent with prominent green longitudinal veins and finer transverse and reticulate veins, laterally inflated at base then gradually tapered, ending in a filiform point 12–15 mm long. *Lateral sepals* projecting obliquely forward then down, stiffly divergent and spreading widely, 35–45 mm long, dark brown, margins olive-green and mildly involute, points divergent to inwardly

falcate, 28–35 mm long, linear-filiform, with a brown anterior surface and olive-green posterior surface, involute to tubular distally, apex acute; conjoined part 5–8 mm long, 5–6 mm wide, central pad raised and shallowly mounded. *Petals* falcate, basally expanded, 30–35 mm long, 4–5.5 mm wide, dark brown with lighter interveinal areas; distal part 15–20 mm long, filiform, tapered to flagelliform. *Labellum* plumose, 20–26 mm long, erect at base then curved and projecting forwards through the sinus; hinge 0.75–1 mm wide, dark brown; lamina 15–19 mm long, *c.* 0.5 mm diam., linear to filiform, brown at base becoming green distally; basal beak, 2–2.5 mm long, 1–1.5 mm in diam., narrowly ovate, notched; apical knob swollen, 1.5–2 mm long, *c.* 1 mm wide, navicular, dark brown; lateral surface of basal beak and proximal quarter of lamina with fine white randomly distributed hair-like structures 1–1.5 mm long that project laterally and upward; lateral surface of the proximal one-eighth of lamina with 3–5 pairs of stiff white hair-like structures 2.5–3 mm long that project laterally and are contained within the sinus; lateral lamina surface with 7–9 well-spaced but loose pairs of stiff pale yellow moniliform hair-like structures that are 3–5 mm long and project outwards and downwards. *Column* erect on ovary at base, 22–25 mm long, light greenish white, broadest just near base of column wings; wings curving forward and inward, 6.5–8 mm long, 5–6 mm wide, narrowly triangular when viewed laterally, translucent white adorned with short white tangled hair-like structures; basal lobe downcurved, 2–2.5 mm long, *c.* 1 mm wide, obtuse, the inner margins incurved with mid-section 4–4.5 mm long and translucent with short scattered hair-like structures on inner surface; apical lobe 4–4.5 mm long, linear with irregular margins, verruculose. *Anther* 2–2.5 mm long, with a short peaked rostrum. *Pollinia* clavate, *c.* 2 mm long, yellow, mealy. *Stigma* 7–8 mm long, 2–2.5 mm wide, scutelliform, narrowly elliptical, raised. *Ovary* 10–12 mm long, 4–4.5 mm wide, erect, longitudinally-ridged, green. *Capsule* not seen. (Figure 4, 5B)

Diagnostic features. *Pterostylis inflata* can be distinguished from all other members of the genus by the following characters: distinctive bird-shaped flowers; basal leaves in an extended loose rosette over the lower scape; flowers 40–65 mm long, 40–55 mm across, with the lateral sepals spreading widely, with extended apical free points 13–20 mm long on the dorsal sepal and 25–32 mm long on the lateral sepals; galea broadest basally, 15–18 mm wide when viewed from the front; labellum plumose with hair-like structures present in three distinct forms; lateral surface of basal beak and proximal quarter of lamina with fine white randomly distributed hair-like structures 1–1.5 mm long that project laterally



Figure 4. *Pterostylis inflata*. A & B – flowers. Voucher: G. Brockman GBB 4578. Photographs: G. Brockman.



Figure 5. *Pterostylis inflata*. A – Jarrah-Marri forest habitat; B – flower section, showing column and labellum in detail. Voucher: G. Brockman GBB 4578 (B). Photographs: G. Brockman.

and upward; lateral surface of the proximal one-eighth of lamina with 3–5 pairs of stiff white hair-like structures 2.5–3 mm long that project laterally and are contained within the sinus; lateral lamina surface with 7–9 well-spaced but loose pairs of stiff pale yellow moniliform hair-like structures that are 3–5 mm long and project outwards and downwards.

Other specimens examined. WESTERN AUSTRALIA: NE of Manjimup c. 45 kms, Perup fire plots, SE of junction of Boyup–Cranbrook Rd & Northern Rd, 28 Sep. 1995, *A.R. Annels, B.G. Ward & A. Robinson* ARA 5478 (PERTH); Brockman/Stewart rest area, Brockman Hwy, 700 m W of Stewart Rd, 16 Sep. 2023, *G. Brockman* GBB 4572 (CANB, PERTH); Milyeannup Coast Rd, 8.2 km S of Stewart Rd, 16 Sep. 2023, *G. Brockman* GBB 4577 (CANB, PERTH); Old gravel scrape 750 m E of Caves Rd. Track to scrape joins Caves Rd 1.2 km S of Vlam Rd, 12 Sep. 2017, *C.J. French* CJF 11575 (PERTH); Milyeannup Coast Rd, 8.2 km SW of Stewart Rd, 15 Sep. 2022, *C.J. French* CJF 14579 (PERTH); Milyeannup Coast Rd, 6.6 km SW of Stewart Rd, 15 Sep. 2022, *C.J. French* CJF 14582 (PERTH); Warner Glen Rd, 1.2 km E of Bussell Hwy, 17 Sep. 2023, *C.J. French* CJF 14961 (PERTH); Mowen Rd parking bay, 7.3 km SE of Baker Rd, 17 Sep. 2023, *C.J. French* CJF 14963 (PERTH).

Distribution and habitat. Currently known from an area between Margaret River and Nannup to the north, and Mt Barker and Manjimup to the south. Grows in damp Marri and Jarrah forest, often with *Xanthorrhoea*, in sandy clay over laterite (Figure 5A). It responds to disturbance, growing freely in and around rehabilitated gravel scrapes and road verges.

Conservation status. Common where found in State forest (Milyeannup and Blackwood) and remnant road reserves along the Brockman Highway, Milyeannup Road and Warner Glen Road.

Etymology. From the Latin *inflatus* (bladdery, i.e. thin membranous and swollen), alluding to the galea.

Common name. Bloated Bird Orchid.

Affinities. *Pterostylis inflata* can be separated from *P. barbata* Lindl. by its mostly wider and inflated galea (15–18 mm wide *cf.* 12–15 mm and not inflated in *P. barbata*), and its lateral sepal morphology (free points 28–35 mm long and widely spreading *cf.* 20–30 mm and diverging obliquely).

Pterostylis inflata can be distinguished from *P. precatorea* (D.L.Jones, C.J.French & M.A.Clem.) D.L.Jones & C.J.French by its smaller flowers, (40–65 mm long *cf.* 70–95 mm in *P. precatorea*), and shorter and sparser yellow hair-like structures on the labellum (3–5 mm long and in 7–9 pairs *cf.* 6–10 mm long and in 16–22 pairs). *Pterostylis inflata* grows in Marri-Jarrah forest whereas *P. precatorea* occurs on granite outcrops.

Pterostylis inflata shares a Marri-Jarrah habitat with *P. sigmoidea* (D.L.Jones & C.J.French) D.L.Jones & C.J.French. It can be distinguished from this species by its swollen galea that lacks the typical sigmoid shape of *P. sigmoidea*. It also has a labellum with yellow hair-like structures 3–5 mm long and in 7–9 pairs (*cf.* 8–10 mm long and in 10–15 pairs in *P. sigmoidea*).

Thelymitra congesta G.Brockman & C.J.French, *sp. nov.*

Type: [NW of Northampton], Western Australia [precise locality withheld for conservation reasons], 2 September 2024, *G. Brockman* GBB 4633 (*holo:* PERTH 09793550; *iso:* CANB, MEL).

Illustrations. A.P. Brown, K.W. Dixon, C.J. French & G. Brockman, *Field guide to the Orchids of Western Australia*: 446 (2013), as *Thelymitra* sp. ‘Murchison’; N. Hoffman, A.P. Brown & J. Brown, *Orchids of South-West Australia*, 4th edn: 304 (2019), as *Thelymitra* sp. ‘Murchison’; A.P. Brown, *The Complete Orchids of Western Australia 2*: 242–243 (2022), as *Thelymitra* sp. ‘Murchison’.

Terrestrial tuberous *herb* 25–30(–35) cm high, growing in clumps of up to 30 plants. *Leaf* basal, arching away from scape, often horizontal or descending in distal half, 15–20 cm long, 8–12 mm wide, lanceolate, deeply carinate, bright light green at anthesis with increasing yellow to red infusion distally with age. *Scape* erect, 130–200 (–250) mm high, 2.5–3.5 mm diam., stiff, somewhat fleshy, soft green to maroon; sterile bract sheathing scape in lower third, 20–25 mm long, 6–8 mm wide, light green; floral bract at base of pedicel 12–28 mm long, 4–8 mm wide, sheathing pedicel and ovary base. *Pedicels* 10–12 mm, 1–2 mm diam. *Flowers* 1–4(–5), in a short, loose terminal inflorescence, 25–32 mm across, with a sweet honey odour; sepals and petals in varying shades of mauve or blue, broadly oblanceolate to narrowly ovate, mildly concave in transection both longitudinally and laterally, glabrous, with entire margins, apex acute. *Dorsal sepal* semi-erect to curved obliquely forward, 15–20 mm long, 4–5 mm wide, mildly involute, apex acute. *Lateral sepals* spreading obliquely, gently incurved, 12–16 mm long, 4–5 mm wide. *Petals* spreading above horizontal, gently incurved, 12–16 mm long, 4–5 mm wide, apex acute. *Labellum* similar in shape and colour to petals. *Column* erect on end of ovary, 5–6 mm long, 3–4 mm wide, white to pale blue; post anther lobe gently curved, hooding the anther, 2.5–3 mm long, 1.5–2 mm wide, tubular, inflated, black to golden tan with a yellow apex, with margins erose distally, apex emarginate; lateral lobes converging, porrect at base, curved upwards from half the length, 1–1.5 mm long, digitate, terminating in a ball of white hairs, the hairs 0.5–1 mm long. *Ovary* erect, 10–12 mm long, 2.5–3 mm diam., obovoid, distinctly ridged, glabrous. *Anther* mid-way along column, 2–3 mm long, 1–2 mm wide, ovoid. *Pollinia* white with coherent pollen. *Viscidum* c. 0.6 mm in diam., rounded. *Stigma* situated at column base, 1.5–2.5 mm long, 1.2–2.2 mm wide, ovate-quadrangle, margins irregular. *Capsule* 8–15 mm long, 4–7 mm wide, obovoid, erect, ribbed. (Figure 6)

Diagnostic features. *Thelymitra congesta* can be distinguished from all other members of the genus by the following combination of characters; plants growing in clumps of up to 30 individuals; a short inflorescence of 1–5, blue to mauve flowers that are 25–32 mm across, and a deeply carinate leaf 8–12 mm wide that spreads widely away from the scape.

Other specimens examined. The type gathering is the only confirmed collection of this species.

Phenology. Flowering occurs from mid-August to late September.

Distribution and habitat. Known from only two populations in the Gregory area north-west of Northampton where it grows in low lying clay-based damp heath. These areas are wet with pooling surface water in reasonable seasons, forming a dry cracking clay by the time the species is in flower.

Conservation status. To be listed as Priority One under Conservation Codes for Western Australian Flora (Tanya Llorens pers. comm.). Locally common but only known from two populations approximately 20 km apart. At both locations it grows with numerous orchids including *Caladenia elegans* Hopper & A.P.Br. and *Pterostylis sinuata* (D.L.Jones) Janes & Duretto, two Threatened species. The type location is a thin roadside strip between farmland and the road, subject to the influence of both agricultural and road maintenance activity and increasingly affected by weed encroachment. The second (unvouchered) population is on a wider road reserve but is subject to the same threats.

Etymology. From the Latin *congestus* (clumped or crowded together), in reference to the species' tendency to grow in large clumps.

Common name. Northern Scented Sun Orchid.

Affinities. *Thelymitra congesta* is closely allied to *T. petrophila* Jeanes but differs in its clumping habit (up to 30 plants in a dense clump *cf.* mostly solitary in *T. petrophila* but occasionally 3–4 plants in a clump), the leaf spreading widely from the scape *cf.* erect, being somewhat shorter 15–20 cm *cf.* 10–30 (–60) cm with fewer flowers (1–4(–5) *cf.* 2–10(–15)), and occurring in damp clay habitat whereas *T. petrophila* occurs almost exclusively on or around granite outcrops. The two species are not known to grow together.



Figure 6. *Thelymitra congesta*. A – plants growing together in clumps; B – inflorescence. Voucher: G. Brockman GBB 4633. Photographs: G. Brockman.

Note. Examination of PERTH specimens and field studies suggests a further two undescribed taxa may grow in the Murchison area, north of the Murchison River. One (G. Brockman GBB 2372), grows on yellow sand flats in association with sedges, flowers in October, and has grey-blue flowers with a distinctive black post anther lobe. The second (A.S. George 9542), tends to occur in damper areas (along creek lines and in clay pans) in the upper Murchison and flowers in August and September. Specimens of both forms are currently housed under the informal name *Thelymitra* sp. Murchison (A.S. George 9542) at PERTH. Further research is required to determine their taxonomic status.

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